

QUARTERLY REPORT

For the Period

October 1, 1967 - December 31, 1967

DESIGN AND MANAGEMENT OF BIOMEDICAL
APPLICATIONS SYSTEMS FOR NASA

NSR-09-010-035

Submitted to:

The Office of Technology Utilization
National Aeronautics and Space Administration
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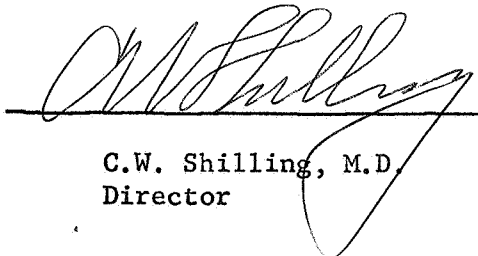

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TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	1
II. PROGRAM DESIGN	2
A. SRS-NASA ACTIVITIES	
B. NICHD-NASA ACTIVITIES	
C. OTHER ACTIVITIES	
III. PROGRAM MANAGEMENT	3
A. BIOMEDICAL APPLICATION PROGRAM	
B. BIOMEDICAL IDENTIFICATION PROGRAM	
IV. OTHER EFFORTS	6
A. RESPONSE TO INQUIRIES	
B. BIOMEDICAL ISLAND DISPLAY	

I. INTRODUCTION

The objective of the research performed under NASA Contract No: NSR-09-010-035 is, as the title indicates, to design and manage programs for relating aerospace technology to problems in biomedical research. The multidisciplinary catalytic team approach has been established as a means of overcoming two major problems of such technology transfer: the lack of continuous communication between biomedical and nonbiomedical researchers, and the lag time between innovation and application.

The purpose of this report is to document the results of the activities performed during the period October 1, 1967 to December 31, 1967.

II. PROGRAM DESIGN

The work reported below is concerned with the initial development of programs for relating aerospace technology to biomedical problems, and the implementation of such programs. During the period covered by this report, major efforts were concentrated in developing and implementing interagency programs.

A. SRS-NASA ACTIVITIES

Following the SRS-NASA Interagency Conference in August, it became apparent that the interagency activity did not seem particularly useful to two SRS funded groups; Tufts University and Case Western Reserve. Dr. Freedman of Tufts University declined the offer to outline a better means of coordination between his operation and the Biomedical Application Team. Therefore, we suggested that Rancho Los Amigos Hospital be selected as a replacement. An invitation from SRS was sent to Dr. Nickel, Rancho Los Amigos Hospital, and he accepted. Interaction with this group will be accomplished through the Southwest Research Institute.

Dr. Reswick of Case Western Reserve University does not feel that the program is particularly useful to the graduate students so, although conversations continue with Case Western Reserve, they are at a rather low frequency. A letter of invitation has been extended to Dr. Frederic J. Cottke, Professor and Head of the Department of Physical Medicine and Rehabilitation, the University of Minnesota School of Medicine. If they accept, they will be handled by the Midwest Research Institute.

B. NICHD-NASA ACTIVITIES

It became apparent following discussions with administrators at NICHD that an initiating program between that program and NASA might well be established by interfacing NASA sponsored Biomedical Application Teams with NICHD sponsored Mental Retardation Centers. A series of presentations and discussions between Mr. Mike Begab, Mr. Dick Barnes and Dr. Hartwig led to the suggestion of a visit by NICHD administrators to a NASA research center. Since NASA Langley was holding its 50th Anniversary at the time, a group from NICHD visited Langley and were quite impressed with the technology described. They felt that the next step would be to encourage the Directors of NICHD sponsored MRC's to participate in the inter-agency activity. A conference was held at NASA Headquarters between NICHD administrators, Directors of MRC's, representatives

of the Technology Utilization Division, OART, and George Washington University. This meeting served to identify areas of interest on the part of MRC Directors and a number of suggested speakers for a proposed two day conference to be held in Houston were identified.

C. OTHER ACTIVITIES

1. NASA-SBA Conference

Dr. Hartwig made a presentation at the NASA-SBA Conference held at the California Institute of Technology and the title of the presentation was "Practical Applications of NASA Technology in Biology and Medicine".

2. Cooperation of the Technology Utilization Division in the Field of Law Enforcement

Participated in conversations with the International Chiefs of Police and obtained from them a list of problems. Answers were obtained from Dave Bendersky, Jim Brown and Dr. Hartwig. They were forwarded to the Director of the Technology Utilization Division.

3. Cooperation of the Technology Utilization Division in the Field of Urban Problems

Discussed the Wayne State University program to evaluate the Team concept approach to urban problems with Don Overly and Bob Berkel. They left some examples of problem abstracts with us and they were critiqued.

III. PROGRAM MANAGEMENT

The work reported below is concerned with the management of the Identification and Application Programs.

A. BIOMEDICAL APPLICATION PROGRAM

1. An extension of the Southwest Research Institute Biomedical Application Team, the West Coast has now been established through the services of Mr. Jeff Buck, Los Altos, California. He will interact with the University of Washington School of Medicine, Rancho Los Amigos Hospital and the Seattle Handicapped Center.

2. The Annual Biomedical Application Team Conference was held October 31 - November 1, 1967, in Durham, North Carolina. A major outcome of this meeting was a

memorandum of technical direction to the Biomedical Application Teams regarding improvement of the techniques for identifying problems and performing searches.

3. The Quarterly Report of the Midwest Research Institute Biomedical Application Team has been reviewed.

4. Several meetings were held with representatives of OART on the subject of video enhancement at the Jet Propulsion Laboratory.

B. BIOMEDICAL IDENTIFICATION PROGRAM

The process of identifying new technology arising from Headquarters NASA sponsored research and of use or interest to the biomedical research community involved the performance of the following three reviews:

1. Review of Contracts - a review of selected contracts to determine the new technology of value in biomedical research that might be expected to arise from the performance of work under such contracts.
2. Review of Reportable Item Submissions - an evaluation of all Reportable Item Submissions from the contractor in areas of biomedical research.
3. Review of Reports - a review of selected contractor progress, New Technology, and final technical reports to identify any technology of value to biomedical researchers that was not previously reported as such.

REVIEW OF CONTRACTS

During the period covered by this report, 24 contracts were reviewed for expected new technology of value to biomedical research. It was anticipated that such new technology would be developed in the following 17 of those contracts:

NSR-09-035-001	NSR-31-001-034	NASW-417
NSR-39-011-005	NSR-14-003-910	NASW-508
NSR-09-012-911	NSR-22-014-001	NASW-1170
NSR-44-012-039	NSR-39-005-020	NASW-1306
NSR-44-003-021	NSR-23-003-005	NASW-1560
NSR-06-005-001	NSR-23-005-162	

The following seven contracts, upon review, were expected not to contain new technology of value to biomedical research:

NSR-09-010-027	NSR-10-007-032	NASW-1252
NSR-47-005-070	NSR-32-001-002	
NSR-05-003-117	NSR-09-012-908	

In addition, the following contracts are to be reviewed for expected new technology of value to biomedical research:

NASW-787	NASW-1191	NASW-1562
NASW-789	NASW-1465	NASW-1630
NASW-1002	NASW-1507	NASW-1631
NASW-1022	NASW-1515	
NASW-1054	NASW-1556	

REPORTABLE ITEMS EVALUATED

During the period covered by this report, three Reportable Items were evaluated for new technology of value to biomedical research. One of these was considered to be of value and two were not. In addition, two Reportable Items are in the process of being reviewed. The following is a listing of the Reportable Items acted upon during the period covered by this report:

<u>REPORTABLE ITEM NO:</u>	<u>TITLE</u>	<u>STATUS</u>
HQN-10111	Microbiological (Virus and Bacteria) Detectors	"KILLED" Returned 10-13-67
HQN-10122	The Reliability of Utilizing Biotically Produced Alkanes as Biological Indicators	"PASSED" Returned 10-11-67
HQN-10066	Bioenergy Electrical Power Source	"KILLED" Returned 11-20-67
HQN-10137	Body Support for Astronaut Engaged in Extravehicular Activities	Being Reviewed
HQN-10165	1967 Behavioral Model of Man	Being Reviewed

C. REPORTS REVIEWED

Reports from the following Contracts were reviewed for evidence of unreported new technology of value to biomedical research:

NASW-1627
NASW-1329
NASW-1061

In all cases, no such new technology was noted. In addition, reports from Contract No. NASW-1306 are currently being reviewed.

IV. OTHER EFFORTS

The following is a discussion of other work performed under the contract during the period covered by this report.

A. RESPONSES TO INQUIRIES

During the period covered by this report, approximately 20 detailed responses to inquiries regarding NASA and the biomedical application program were prepared. The inquiries were rather evenly divided with respect to source into the following groups:

Government Agencies and Military
Medical Schools and Hospitals
Industry
Other (school children, associations, etc.)

B. BIOMEDICAL ISLAND DISPLAY

As a follow-up to discussions held at the TUO Conference in Cleveland, detailed rough drafts of two sides of an island display of the NASA Biomedical Application Program were prepared and submitted to Dick Orrick for his review and suggestions.